

Speeding Inventions Along— From Lab to Marketplace

Typically, inventions progress from a concept to working model, then advance through proof-of-concept, and finally are ready for commercial implementation. This process can be difficult for even the most promising and potentially beneficial new ideas. Many good ideas flounder in the step between a working laboratory model and the proof-of-concept stage.

Government labs have historically developed new technologies only to a point of readiness for transfer to developers, while the private sector has preferred to commercialize only well-developed ideas with known risk. Technologies caught somewhere between are said to be stranded in a sort of Death Valley that represents a confidence or investment gap.

This gap occurs when the investment required to complete development of a new technology may be beyond the research mission of the government laboratory but too early in the commercialization process for the private sector to see it as an acceptable business risk.

However, in the 1980s, the U.S. Congress began to provide tools to help government laboratories form partnerships with the private sector to bridge this confidence gap. Through partnering, promising technologies can receive both a research push from the government lab and a commercial pull from the private-sector partner.

Agricultural Research Service laboratories have a long history of technology development with industry. But spanning Death Valley has been all too real a problem for the agency. So governmentwide technology transfer tools—such as cooperative research and development agreements

and exclusive patent licenses—have been important bridges.

The cover story in this issue highlights the 10th anniversary of one of ARS' efforts to bridge the gap between fundamental research and successful commercial application.

The Biotechnology Research and Development Corp. (BRDC) brings publicly funded basic science together with industry in a way that maximizes the chance for successful commercialization of the research results. It was created to leverage both public and private resources by supporting fundamental research projects with commercial potential identified by BRDC's member companies.

With early industrial interest and investment, Death Valley is growing narrower and shallower and easier to bridge. BRDC has served its role well, with several important successes, and it is, we believe, on the verge of reaping substantial further successes from early investments. It has indeed been a life-sustaining bridge for numerous young and vulnerable technologies.

The U.S. Department of Agriculture has other innovative bridges, including the Alternative Agricultural Research and Commercialization Corporation (AARC) and the Small Business Innovation Research (SBIR) Grant Program.

The AARC is USDA's own venture capital fund for investment through loans and equity participation in companies that are well positioned to turn environmentally sound technologies into successful commercial products. The SBIR program provides critical research funding to small companies in the early phases of commercialization of new technologies that are often derived from public research facilities.

Both USDA initiatives have served as effective bridges over the laboratory-to-marketplace gap. In fact, several

private companies have already made good use of these bridges to help develop ARS inventions into successful products.

Pilot plant facilities in ARS utilization centers provide another way for our scientists and our industrial partners to demonstrate proof-of-concept or marketability of new ARS discoveries.

To build more bridges, ARS Office of Technology Transfer and the National Program Staff have been establishing cooperative working arrangements with state economic development programs and trade associations to bring in additional resources to speed the commercialization of ARS inventions by our industrial partners.

With these bridges and other technology transfer tools now available, we are well positioned to work with industry to solve agricultural problems of regional or national significance.

Companies with specific needs can use various technology transfer tools to plug into the ARS technology pipeline at any of three basic entry points in the research continuum: cooperative research early in the conception/discovery of a new technology; during an emerging-invention phase when intellectual property rights may be gained through close cooperation and development; or via practical application of existing inventions through patent licensing and commercial development.

Together with funding opportunities or other resources from BRDC, AARC, or the SBIR program at any of these stages, Death Valley can be crossed and successful real-world solutions to important agricultural problems achieved, ensuring a successful return on the nation's investment in public research.

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